Water Fluoridation and the Alleged Relationship to Cancer

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In spite of ongoing support from leading health experts and the endorsement of many national and international health related organizations, there has been a strong movement among opponents to link fluoridated water to cancer, and more specifically to osteosarcoma.

Osteosarcoma is a type of bone cancer that primarily affects children and adolescents. It is very rare, with only 400 new cases diagnosed each year in the United States.

There are a significant number of published studies that have examined the relationship between fluoride and cancer.

According to the American Cancer Society (2010), more than 50 population-based studies looking at the potential link between water fluoride levels and cancer have been reported in the medical literature and most have not found a strong link to cancer.

In the United Kingdom, the National Health Service (NHS) Centre for Reviews and Dissemination, University of York published a comprehensive systematic review on the safety and effectiveness of water with varying amounts of fluoride (McDonagh et al., 2000). The authors found no clear association between water fluoridation and overall cancer incidence and mortality. Of the 12 studies specific to osteosarcoma, the direction of association between fluoridation and osteosarcoma was found to be positive (fewer cancers) in seven, negative (more cancers) in three, and two found no association.

Subsequent to publication of the University of York review, a partial analysis (Bassin et al., 2006) of a larger Harvard School of Dental Medicine study demonstrated an association between drinking fluoridated water and osteosarcoma in young males, ages 6 to 8 but not females of any age. A limitation of the study was that fluoride exposure was estimated based on historic residential information and reported or estimated fluoride concentration which cannot reflect the true fluoride exposure.

A recent study (Kim et al., 2011) published in the *Journal of Dental Research* found that fluoride level within the bone was not associated with an increased risk of osteosarcoma. This study was part of the larger Harvard review. It examined whether bone fluoride level was related to an increased risk for osteosarcoma by analyzing and comparing the bone fluoride levels in patients diagnosed with osteosarcoma with those diagnosed with other types of bone cancer. This is important because instead of estimating fluoride intake, fluoride exposure was determined by measuring fluoride levels through bone samples taken from cases (osteosarcoma diagnoses) and controls (other bone cancer diagnoses).

Both studies are from the same large data set and they add to the existing body of evidence, which as a whole doesn't demonstrate a clear association between fluoride and cancer.

The U.S. Centers for Disease Control and Prevention (CDC) strongly endorses the practice of community water fluoridation to prevent tooth decay. Regarding potential issues related to adverse health, the CDC states that, "the weight of the peer-reviewed scientific evidence does not support an association between water fluoridation and any adverse health effect or systemic disorder, including an increased risk for cancer" (CDC, 2009).

References

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